Lab 4

Deadline: Deadline on Moodle on 13 Mar, 2024

The task is to develop a Python program that calculates the sum of digits of each number in an array of integers. The program should accomplish this using recursion.

```python
import sys

def sum_of_digits(n):
    """
    Calculate the sum of digits of a given number using recursion.

    Parameters:
    - n (int): The number for which the sum of digits needs to be calculated.

    Returns:
    - int: The sum of digits of the given number.
    """

    # WRITE YOUR CODE BELOW

    # DONT WRITE ANYTHING BELOW THIS

def main():
    # Initialize an array of numbers for testing
    numbers = [123, 456, 789]

    for num in numbers:
        # Calculate the sum of digits for each number
        digit_sum = sum_of_digits(num)
```

Requirements

1. **Input**

   ◆ The program should take an array of integers as input. Each integer in the array represents a number for which the sum of digits needs to be calculated.

2. **Sum of Digits Calculation**

   ◆ Implement the sum of digits calculation algorithm using recursion. This algorithm should calculate the sum of digits for each integer in the array.

3. **Output**

◆ The program should print the sum of digits for each number in the array.
◆ The sum_of_digits function should return the sum of digits for the number passed to it.

4. **Save the File Offline**
◆ Click the "Download Code" button/icon to save the file offline.

5. **Submission**
◆ Include your Student ID as comment at the top of your code i.e #012345. Rename
◆ the main.py file to lab4.py. Place the lab4.py in a folder and compress to a zip file.
◆ Submit it to moodle.

6. **Grading**
◆ (1 point) Correct submission of working code with no errors and loop implementation.
◆ (5 point) Correct solution to the problem.